TRUNK ORDER OR CIRCUIT ORDER TESTS FOR ALL TYPES OF MESSAGE TRUNKS—GENERAL INFORMATION

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1. GENERAL

1.01 This section provides general information on the trunk order or circuit order tests required to be made on all types of message trunks before they are placed in service in the Direct Distance Dialing (DDD), Extended Area Service (EAS), Local Dialing Telephone Networks, and Incoming Wide Area Telephone Service (INWATS).

1.02 This section is reissued to bring the section up to date. Since this issue is a general revision, arrows ordinarily used to indicate changes have been omitted.

1.03 Trunk order or circuit order tests must be made on either an automatic or manual basis before trunks are placed in service. The primary reasons for performing trunk tests on a preservice basis are:

(a) to ensure that all the various elements making up a trunk are in proper alignment

(b) to verify that the trunks meet the transmission and operational requirements for which they were designed.

1.04 Trunks not meeting the requirements after normal corrective action is taken should be investigated for wiring and installation errors, equipment troubles, etc. All tests ***must*** be made and all test requirements ***must*** be met before the trunks are placed in service.

1.05 ***Any trunk failing to meet its requirements should not be turned up for service.***

1.06 The designated control office has the overall responsibility for trunks meeting their requirements before they are placed in service. This responsibility includes verifying the completion of tests and adjustments made at other locations as well as at the control office.

1.07 Trunk order or circuit order tests are based on the objective of providing good service to all customers all of the time to the extent practical. Meeting this objective depends upon the ability to provide rapid switching of calls and a high quality of transmission on every message trunk. From a transmission viewpoint, there is no longer any distinction between toll- and exchange-type trunks.

1.08 Trunk order or circuit order test requirements are given in Section 660-450-301.

2. EXPLANTIONS OF TERMS USED IN TRUNK ORDER OR CIRCUIT ORDER TESTING

A. EML

2.01 The expected measured loss (EML) is the calculated 1 kHz loss of the trunk as shown on the circuit or trunk layout card, including the switching (or cord circuit) loss, the inserted connection loss (ICL), and specified test pad (TP) losses at either or both ends. The ICL is the sum of all gains and losses from the originating outgoing switch appearance to the terminating outgoing switch appearance to which the trunk is connected, with the trunk terminated in the nominal (600 or 900 ohms) impedance of the office. (When calculating loss, gain is considered a negative value while loss is positive.)

B. AML

2.02 The actual measured loss (AML) is the actual loss measured at any time between the same appearances or equivalent and under the same conditions as those for which the EML was calculated, including test pad losses when specified. The AML is compared with the EML to determine the condition of the trunk with respect to transmission loss and to indicate the need for corrective action.

C. Switch-Through-Switch Design of Message Trunks

2.03 The method for computing trunk losses so that the AML can be compared with the EML is called switch-through-switch design. Switch-through-switch computations consist of adding algebraically all the losses and gains in dB between the outgoing switch appearance of the trunk at the originating end and the outgoing switch appearance of a test line to which the trunk is connected at the terminating end (see Fig. 1). (When calculating loss, gain is considered to be a negative value while loss is positive.)

2.04 Access to outgoing and 2-way trunks for trunk order or circuit order testing should always be from the equivalent of the following outgoing switch appearances:

(a) Outgoing link frame in No. 4-type crossbar offices

(b) Office link frame in crossbar tandem and No. 1 crossbar offices

(c) Trunk link frame in No. 5 crossbar offices

(d) Outgoing selector bank in step-by-step offices

(e) Office or district selector frame in panel offices

(f) Outgoing trunk multiple in manual switchboards

(g) Trunk link frame in No. 1, 2, or 3 Electronic Switching System (ESS) offices.

(h) Time slot interchange in No. 4 ESS office.

2.05 Incoming trunks should always be accessed for trunk order or circuit order testing by means of an incoming test line, which is reached by signaling from the outgoing office. The 101- or 105-type test line should have an appearance on an outgoing switch at the incoming office which is equivalent to that of a trunk or subscriber line to which the trunk under test would normally be connected in regular usage. In No. 4 ESS offices, proper access to incoming trunks is also available through the switch (see Section 234-120-001).

2.06 The outgoing switch appearances to which incoming trunks are connected in class 4 or higher ranking offices are the same as those listed in 2.04. In class 5 offices, incoming trunks are connected through the office to the following outgoing switch appearances for transmission measurements:

(a) Connector bank in step-by-step offices

(b) Line link frames in No. 1 and No. 5 crossbar offices

(c) Final selector frame in panel offices

(d) Line link frame in ESS offices.

2.07 Certain types of trunks can be accessed at the outgoing or incoming end, or both, in two or more modes of operation; for example, class 5 and class 4 or higher rank of office operation. When trunk order or circuit order tests are made on these trunks, all modes of operation must be tested. Modes of operation are discussed more specifically in Section 660-450-301.

D. Trunk Segments

2.08 As shown in Fig. 1, trunks not terminating at both ends in the same or adjacent buildings consist of three basic segments:

(a) ***Originating Segment:*** Includes the equipment and wiring between the trunk appearance at the outgoing switch and the main distributing frame (MDF) or other facility connecting frame, repeater bay, or voice-frequency (VF) patching bay.

(b) ***Facility:*** The transmission facility between the originating and terminating segments of a trunk, consisting of a cable pair, an open-wire pair, or a carrier channel. Cable and open-wire pairs are terminated at the MDF or other facility connecting frame or, when equipped with V-type repeaters, at a repeater bay. E-type (negative impedance) repeaters and impedance compensators, when provided, are treated as part of the facility. Carrier channels are terminated at the VF access point or the unitized terminal equipment (UTE) frame in the originating and terminating offices.

(c) ***Terminating Segment:*** Includes the equipment and wiring between the MDF or other facility connecting frame, repeater bay, or VF patching bay and the outgoing switch appearance to which the trunk is connected.

2.09 The combined loss or gain, or both, of the three segments plus the loss of any TPs or test hybrids (THs), if used, make up the EML of the trunk. The EML is posted on the circuit or trunk record card, or equivalent. The EML is shown between points **B** and **C** in Fig. 1, 2, and 3. The loss through the switching machine at the terminating (incoming) end of the trunk is always included in the EML.

2.10 T1 carrier facilities with built-in terminating circuits are treated the same as the segments discussed in 2.08 except that the segments for T1 carrier are permanently associated with each other. Test jacks and matching network circuits are provided at T1 terminals for use in measuring and adjusting carrier channels and the originating and terminating segments.

E. Test Pads and Test Hybrids

2.11 Most intertoll trunks are tested with a 2-dB test pad (TP 2) or equivalent at each end, except for No. 4 ESS where 3-dB test pads are used (see Fig. 3 and 4 and paragraph 2.15). The test pad is generally provided as part of the transmission measuring equipment, but its loss is included in the EML and is shown as an equipment loss item on the circuit or trunk layout record card.

2.12 At No. 4-type crossbar switching offices, a test hybrid loss rather than a test pad loss is sometimes specified. For either case, all or part of the switched trunk **A** pad may be switched out during the test. The difference between the test hybrid or test pad loss and the switched-out pad loss, however, is always 2-dB, which is the same as a 2-dB test pad loss.

2.13 Toll connecting, local tandem, and intertandem trunks are usually tested with 2-dB test pads at the toll or tandem office end so that all trunks at a toll office or at a combination toll and local tandem office can be treated uniformly from the standpoint of transmission measuring. When a toll connecting, tandem, or intertandem trunk is measured with a 2-dB test pad, the test pad is included in the transmission measuring path and is shown as an equipment loss item (TP 2) on the trunk layout record card, or equivalent. No test pad is ever used at the local (class 5) office end of any trunk.

2.14 When a 2-dB test pad is used at the toll or tandem office for measuring a toll connecting, tandem, or intertandem trunk, the total loss in the transmitting direction from the outgoing switch appearance of the trunk to the input of the carrier is normally 14-dB. Thus, a test tone of 0-dBm applied through the 2-dB test pad results in an input to the carrier of -16 dBm. So that the trunk inserts the same loss into a connection as a trunk tested without a test pad, an additional 2-dB loss is introduced into the receiving path at the distant office. Therefore, the speech or data signals from the connected trunks are 2-dB higher at the input to the carrier than if the trunk were designed for 16-dB loss to the carrier without the test pad.

2.15 A fixed pad of 3-dB (TP 3) is used in No. 4 ESS offices. All transmission measurements are made through the switch, which is a zero-loss switch. The TP 3 applies to ***all*** trunks terminating on the No. 4 ESS whether of fixed loss or via net loss (VNL) design.

2.16 In No. 4 ESS cutovers, trunks previously homing on a No. 4 crossbar office have to be adjusted approximately 1 dB to compensate for the TLP shift at the No. 4 ESS office. This change is initially made prior to the No. 4 ESS switch-to-switch tests. It is recommended that the pads at the distant non-4 ESS offices be left adjusted for the No. 4 ESS office. This shift may have a minimal effect on office transmission results for the period between the switch-to-switch tests and the No. 4 ESS cutover; however, it minimizes the workload and confusion created when the pads are repeatedly readjusted.

F. Open-Wire Facility

2.17 An open-wire segment of a trunk is that portion assigned to a VF open-wire pair, including any entrance or intermediate cables and all repeaters and equipment associated with the open wire.

G. 2-Wire Cable Facility

2.18 A 2-wire cable layout uses the same cable pair for both directions of transmission. A 2-wire cable segment of a trunk is that portion assigned to a VF cable pair, including 2-wire repeaters which may be used at intermediate offices and at either or both terminals.

H. 4-Wire Cable Facility

2.19 A 4-wire cable layout uses separate VF cable pairs for each direction of transmission. A 4-wire cable segment of a trunk is that portion assigned to two VF cable pairs, including both intermediate and terminal telephone repeaters.

I. Single-Link Carrier Channel Facility

2.20 A single-link carrier channel facility is a facility that operates over a single-carrier system between VF terminals, such as C, H, J, K, N, O, ON, T, or similar systems, or that operates from channel bank to channel bank (voice to voice) over L or R carrier without any intermediate group connectors.

J. Multiple-Link Carrier Channel Facility

2.21 A multiple-link carrier channel facility is a facility that operates over more than one carrier system interconnected at group frequencies, that is, that contains one or more group connectors.

K. Multifacility Trunk

2.22 A multifacility trunk is a trunk that has more than one class of facility, such as:

(a) 2-wire cable, 4-wire cable, open wire, or carrier channel. Short lengths of entrance or intermediate cable in an open-wire segment are not a separate class of facility.

(b) two or more carrier channels in tandem, interconnected on a VF basis.

(c) two or more 4-wire cable segments in tandem with 4-wire terminating sets at the point of interconnection.

L. Class of Office

2.23 The class of office is a rank assigned to switching points in the DDD network on the basis of their switching functions and interrelationships with other offices. Some transmission requirements depend on the class of office. The classes, their functions, and the switching areas they serve are described in Section 781-030-100, ***Notes on Distance Dialing***.

M. Intertoll Trunk

2.24 An intertoll trunk is any trunk used to interconnect toll switching offices of class 4 or higher rank.

N. Secondary Intertoll Trunk

2.25 A secondary intertoll trunk is any trunk used to interconnect an automatic toll switching machine and its manually operated assistance switchboard of equal class rank. The two are usually closely associated as a single unit and are located in the same building or in buildings close together.

O. Toll Connecting Trunk

2.26 A toll connecting trunk is any trunk that terminates at one end at a class 5 office and that is arranged to switch at the other end to an intertoll trunk at a class 4 or higher office. The trunk can also be arranged to switch to a trunk other than an intertoll at a class 4 or higher office.

P. Tandem Trunk

2.27 A tandem trunk is any local trunk that terminates at one end in a local tandem office and at the other end in a class 5 office. For this section, tandem completing trunks are included in this category. Some tandem trunks are also used as toll connecting trunks, and vice versa.

Q. Intertandem Trunk

2.28 An intertandem trunk is any local trunk that terminates at each end in a local tandem office.

R. End Office Toll Trunk

2.29 An end office toll trunk connects an end office to a higher ranking office or another class 5 office in a different toll area.

S. Direct (Interoffice) Trunk

2.30 A direct trunk (also called an interoffice trunk) is any local trunk that terminates at each end in a class 5 office.

T. Intrabuilding Trunks

2.31 An intrabuilding trunk is any metallic trunk between different switching machines in the same building or in adjacent buildings where no outside plant or transmission degradation is involved. No. 4 ESS trunks will not be classified as intrabuilding trunks because of the active transmission equipment within the office. Trunks or junctors between a switchboard and a switching machine and intraoffice junctors in No. 5 switching machines are included in this category. An intrabuilding trunk can be in any category discussed in 2.22 through 2.27.

3. TRUNK ORDER OR CIRCUIT ORDER TRANSMISSION TESTING

3.01 Section 660-450-301 supplements this section and serves as a guide for making trunk order or circuit order tests. It includes a series of tables that list sections giving information on trunk records, testing methods and procedures, and circuit order test requirements; and references for information on requirements. Table M summarizes the preliminary tests required on equipment components and facilities. Table N summarizes the overall tests required between trunk terminals.

3.02 In trunk order or circuit order tests, a trunk or circuit that is adjusted according to standard procedures and requirements is more reliable than one adjusted incorrectly; thus, it gives better service and does not require work as often.

3.03 In transmission measurements or trouble investigations, a conscientious effort should be made to find the trouble rather than to compensate for it. Shortcuts, such as adjusting the demodulator potentiometers without checking the intermediate pilots, etc, and without sectionalizing and clearing the cause of excess loss or gain, can only result in more trouble.

3.04 Since many variable conditions can be encountered when trunk order or circuit order tests are made, describing all the measuring and testing procedures in this section would be impractical. ***All trunk order or circuit order tests requirements, however, must have been met before trunks are placed in service.***

4. TRUNK ORDER OR CIRCUIT ORDER TRANSMISSION TESTING WITH AUTOMATICALLY CONTROLLED MAINTENANCE SYSTEMS

4.01 Trunk order or circuit order tests should be conducted with one of the several automatically controlled maintenance systems where possible. In addition to rapid data analysis, the use of one of the automatic systems prior to trunk or circuit turn-up allows an initial checkout of the information which will later be added to one of the data bases for routine automatic transmission testing. Automatically controlled maintenance systems available for trunk order and circuit order testing include Centralized Automatic Recording on Trunks (CAROT), Automatic Transmission Measuring System (ATMS), Automatically Directed Outgoing Intertoll Trunk (ADOIT), Automatic Outgoing Trunk Test (AOTT), Trunk and Facility Maintenance System (TFMS), and Outgoing Trunk Testing System/Remote Office Test Line (OTTS/ROTL).

4.02 Trunk order and circuit order tests are not run automatically from the automatically controlled maintenance systems but are conducted on a demand or request basis. Description of demand operation for trunk testing utilizing the CAROT is given in Section 190-102-100, ATMS in Section 103-250-100, TFMS in Section 103-260-300, ADOIT in Section 212-514-101, AOTT in Section 212-512-501, and OTTS/ROTL in Section 103-261-100.

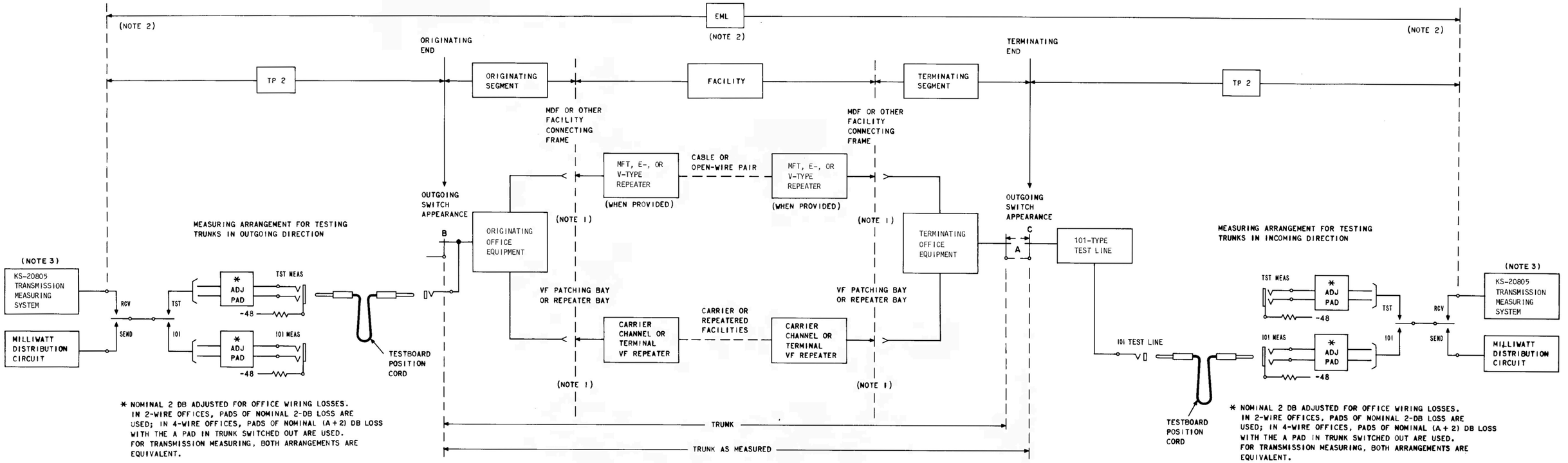
5. MANUAL TRUNK ORDER OR CIRCUIT ORDER TRANSMISSION TESTING ARRANGEMENTS AT TESTBOARD OR EQUIVALENT LOCATIONS

5.01 Figure 2 shows the manual transmission testing arrangements for measuring trunks at testboard locations. The methods for making transmission measurements with the transmission and noise measuring circuits shown on SD-95900-01 are described in the appropriate sections for the testboard in which the circuits are installed. Provision is made in the transmission and noise measuring circuits to compensate for office losses and to ensure that the access paths are electrically equivalent to the outgoing switch appearances discussed in Part 2.

5.02 Figure 3 shows the manual transmission testing arrangements for measuring trunks at a No. 4 ESS office. All measurements are made through the switch (0-dB loss) to a precision-calibrated 51-type test position. The transmission and noise measurement circuit for the 51-type test position is the KS-20805 Transmission Measuring System.

Testboard Equivalent Locations

5.03 For the purposes of this discussion testboard equivalent locations are defined as any trunk test access appearance located in an office test frame or master test frame or equivalent. Testboard equivalent locations are, therefore, any location where access for trunk testing is through a switchable jack appearance in a test frame. Testboard equivalent locations also apply to any switched access maintenance arrangement. Some examples are Integrated Manual Test Frame (IMTF), Master



NOTES:
1. SINCE THE SIGNALING EQUIPMENT CAN BE ASSOCIATED WITH THE TRUNK EQUIPMENT, 4-WIRE TERMINATING SET, TRANSMISSION EQUIPMENT, OR CARRIER CHANNEL, IT IS NOT SHOWN SEPARATELY.
2. THE EML INCLUDES TEST PAD LOSSES AT EITHER OR BOTH ENDS WHEN SPECIFIED AND BATTERY SUPPLY LOSS WHEN PRESENT IN THE MEASURING PATH BETWEEN THE SPECIFIED TEST LOCATIONS.
3. THE TRANSMISSION AND NOISE MEASURING CIRCUIT, SD-99900-01 IS AN EXAMPLE OF THE MEASUREMENT EQUIPMENT WHICH MAY BE USED.

LEGEND:
A – SWITCHING PATH
B – LEVEL POINT OF MEASURING EQUIPMENT CONNECTED THROUGH OUTGOING TEST MULTIPLE AT ORIGINATING (OUTGOING) END OF TRUNK
C – LEVEL POINT OF TEST LINE OR MEASURING EQUIPMENT CONNECTED THROUGH 101-TYPE TEST LINE AT TERMINATING (INCOMING) END OF TRUNK

Fig. 1—Simplified Diagram of a Typical Trunk Showing EML, Trunk Segments, and Test Trunk or Test Jack Access Paths Used for Manual Transmission Measurements

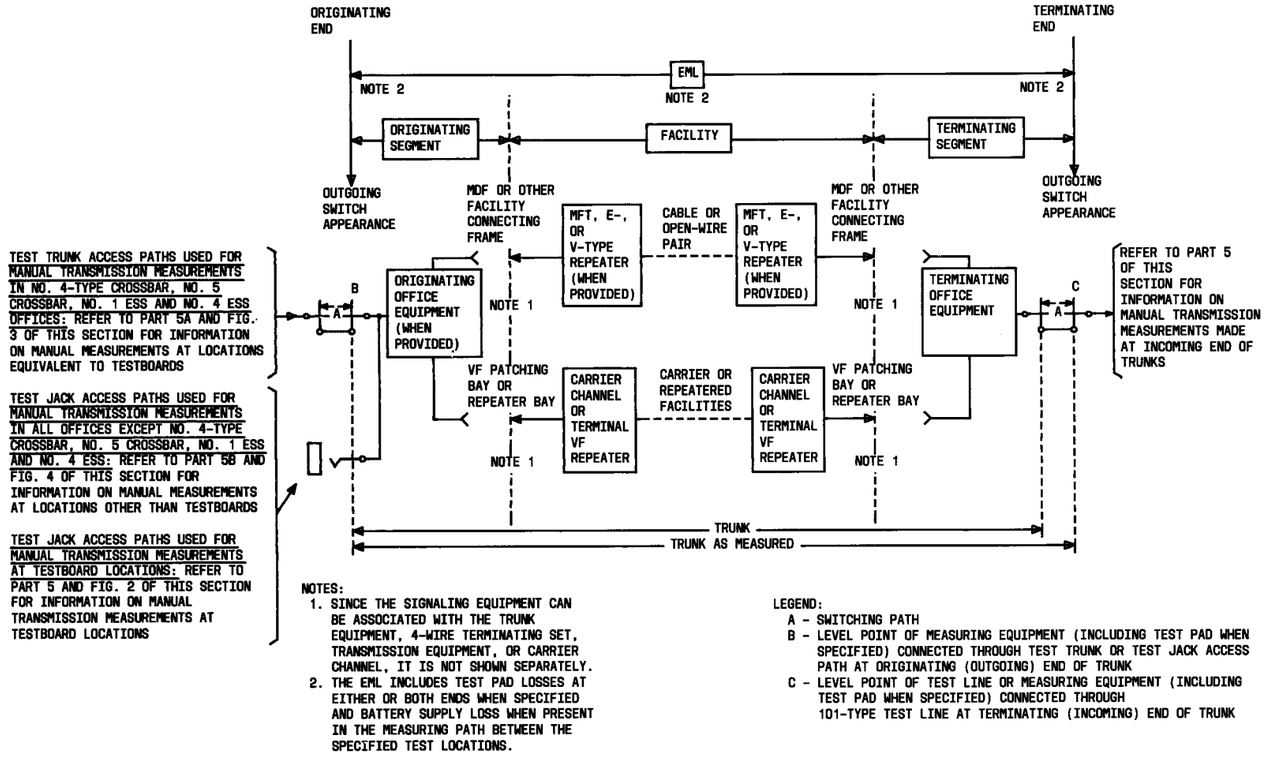


Fig. 2—Simplified Diagram of a Typical Trunk Showing EML, Trunk Segments, and Test Jack Access Paths Used for Manual Transmission Measurements at Testboard Locations

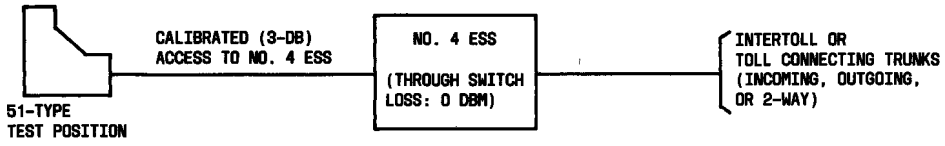


Fig. 3—Simplified Diagram of Manual Transmission Testing Arrangement Provided in No. 4 ESS Office

Test Frame (MTF), Supplementary Trunk Test Panel (STTP), and Trunk Line Test Panel (TLTP).

A. Trunk Test Access Paths Used for Manual Measurements—No. 4-Type Crossbar, No. 5 Crossbar, and No. 1 ESS Offices

5.04 Trunk test access circuits are provided in No. 4-type crossbar, No. 5 crossbar, and No. 1 ESS offices for use in transmission measurements on all outgoing or 2-way trunks having testboard equivalent appearances. The access test trunks are normally located in or near the associated test frames in the switching maintenance area. ***The OGT jacks in No. 4-type crossbar and No. 5 crossbar offices should not be used for transmission measurements.***

5.05 As shown in Fig. 4, the trunk test access paths used for measurements on outgoing toll connecting trunks having testboard equivalent appearances in No. 4-type crossbar offices and on all types of trunks in No. 5 crossbar and No. 1 ESS offices are:

(a) ***No. 4-Type Crossbar Offices:*** The 4-W IN and 4-W OUT jacks at the automatic outgoing toll connecting trunk test frame (AOCT or ATCT).

(b) ***No. 5 Crossbar Offices:*** The SD and REC 1 jacks of the test termination circuit, SD-96540-01, at the master frame, if provided, or the TM or TRK TEST jack at offices not provided with the test termination circuit.

(c) ***No. 1 ESS Offices:*** The jack or key appearance of the outgoing test access trunk provided in the trunk and line test panel which is part of the master control center. In larger offices, one or more supplementary trunk testing panels are also provided from which additional access to the outgoing trunks is available if required. Provision is usually made in the transmission and noise measuring circuits to compensate for office losses and to ensure that the access paths are electrically equivalent to the outgoing switch appearances discussed in Part 2.

5.06 Incoming trunks are always accessed by means of an incoming test line (101-type), which is reached by signaling over the trunk to be tested from the outgoing office. Transmission measurements on incoming trunks are made from the following locations (see Fig. 4):

(a) ***No. 4-Type Crossbar Offices:*** Through the SND and REC jacks of the test circuit shown on SD-68547-01.

(b) ***No. 5 Crossbar Offices:*** Through the jack appearance of the test trunk, shown in Fig. 7 and associated items of SD-98100-01, or through an equivalent jack appearance.

(c) ***No. 1 ESS Offices:*** Through the jack or key appearance of the test access trunk used for incoming test calls. This test trunk is provided at the trunk and line test panel, which is part of or associated with the master control center.

B. Test Jack Access Paths Used for Manual Measurements—All Offices Except No. 4-Type Crossbar, No. 5 Crossbar, and No. 1 ESS

5.07 The test jack appearances used for transmission measurements at the outgoing end of the trunks in all offices except No. 4-type crossbar, No. 5 crossbar, and No. 1 ESS are normally equivalent to the outgoing switch appearances. Where a test pad is part of the transmission measuring circuit, it must be adjusted to compensate for the difference in wiring loss between the test jack appearance at the testing location and the outgoing switch. Where access losses are significant and cannot be compensated for, they should never

be included in the EML. The amount of the access losses should be indicated on the face of the meter or other conspicuous place.

5.08 As shown in Fig. 5, the test jack access paths are:

(a) the SD and REC 1 jacks of the test termination circuit, SD-96540-01, at all offices provided with this circuit

(b) the trunk test (T or T1) jack at the manual outgoing trunk (OGT) test frame, SD-32349-01, at panel, No. 1 crossbar, and crossbar tandem offices not provided with the test termination circuit

(c) the OSC IN and REC 1 jacks at the manual OGT test frame test circuit, SD-32349-01, at step-by-step offices provided with this circuit

(d) the trunk outgoing repeater test jack, or equivalent, at step-by-step offices not provided with the manual OGT test frame test circuit, SD-32349-01.

5.09 At the incoming end, tests are made through the jack-ended incoming test line (101-type), which is reached by signaling over the trunk to be tested from the outgoing end. This test line is shown in Fig. 7 of SD-98100-01, or equivalent, and appears in the jack field shown on SD-96540-01 or SD-32349-01. At offices not equipped with these 101-type test line circuits, the test line usually appears either in a miscellaneous bay in the switching maintenance area or in the local test cabinet.

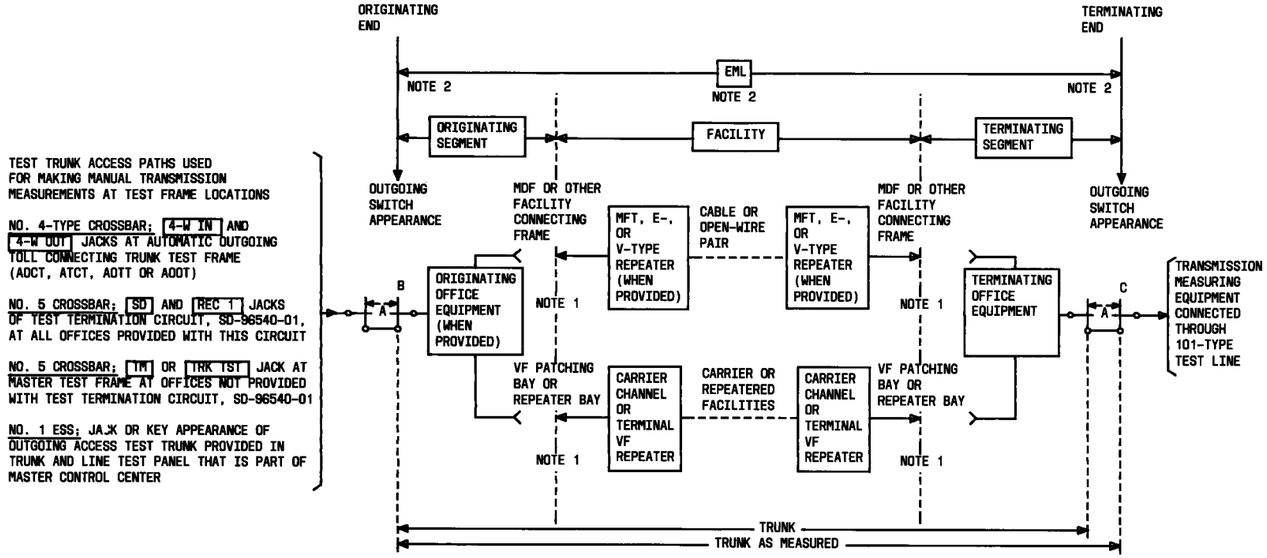
C. Access Jacks Used for Manual Measurements—Manual Switchboards

5.10 The access test jacks used in calculating the EML and in measuring the AML for trunks operated manually are:

(a) the jack appearance of the trunk at the outgoing switchboard at the originating end

(b) the outgoing jack appearance of the same trunk at the terminating end.

The EML, therefore, includes the cord circuit at the incoming end.



TEST TRUNK ACCESS PATHS USED FOR MAKING MANUAL TRANSMISSION MEASUREMENTS AT TEST FRAME LOCATIONS

NO. 4-TYPE CROSSBAR; 4-W IN AND 4-W OUT JACKS AT AUTOMATIC OUTGOING TOLL CONNECTING TRUNK TEST FRAME (AOCT, ATCT, AOTT OR AOOT)

NO. 5 CROSSBAR; SD AND REC 1 JACKS OF TEST TERMINATION CIRCUIT, SD-96540-01, AT ALL OFFICES PROVIDED WITH THIS CIRCUIT

NO. 5 CROSSBAR; TM OR TRK TST JACK AT MASTER TEST FRAME AT OFFICES NOT PROVIDED WITH TEST TERMINATION CIRCUIT, SD-96540-01

NO. 1 ESS; JACK OR KEY APPEARANCE OF OUTGOING ACCESS TEST TRUNK PROVIDED IN TRUNK AND LINE TEST PANEL THAT IS PART OF MASTER CONTROL CENTER

NOTES:
1. SINCE THE SIGNALING EQUIPMENT CAN BE ASSOCIATED WITH THE TRUNK EQUIPMENT, 4-WIRE TERMINATING SET, TRANSMISSION EQUIPMENT, OR CARRIER CHANNEL, IT IS NOT SHOWN SEPARATELY.
2. THE EML INCLUDES TEST PAD LOSSES AT EITHER OR BOTH ENDS WHEN SPECIFIED AND BATTERY SUPPLY LOSS WHEN PRESENT IN THE MEASURING PATH BETWEEN THE SPECIFIED TEST LOCATIONS.

LEGEND:
A - SWITCHING PATH
B - LEVEL POINT OF MEASURING EQUIPMENT (INCLUDING TEST PAD WHEN SPECIFIED) CONNECTED THROUGH TEST TRUNK ACCESS PATH AT ORIGINATING (OUTGOING) END OF TRUNK
C - LEVEL POINT OF TEST LINE OR MEASURING EQUIPMENT (INCLUDING TEST PAD WHEN SPECIFIED) CONNECTED THROUGH 101-TYPE TEST LINE AT TERMINATING (INCOMING) END OF TRUNK

Fig. 4—Simplified Diagram of a Typical Trunk Showing EML, Trunk Segments, and Test Trunk Access Paths Used for Manual Measurements at Locations Equivalent to Testboards—No. 4-Type Crossbar, No. 5 Crossbar, and No. 1 ESS Offices

TEST JACK ACCESS PATHS USED FOR MAKING MANUAL TRANSMISSION MEASUREMENTS AT LOCATIONS EQUIVALENT TO TESTBOARDS

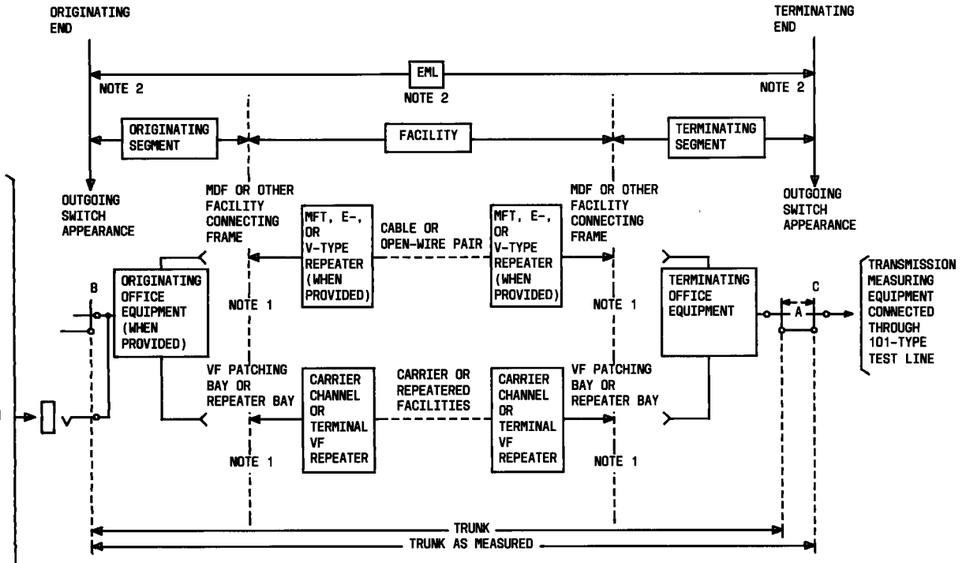
TEST JACK ACCESS PATHS FOR ALL OFFICES EXCEPT NO. 4-TYPE CROSSBAR, NO. 5 CROSSBAR, AND NO. 1 ESS:

(A) [SD] AND [REC 1] JACKS OF TEST TERMINATION CIRCUIT, SD-98540-01, AT ALL OFFICES PROVIDED WITH THIS CIRCUIT

(B) TRUNK TEST ([T]) JACK AT MANUAL OUTGOING TRUNK TEST FRAME AT PANEL, NO. 1 CROSSBAR, AND CROSSBAR TANDEM OFFICES NOT PROVIDED WITH TEST TERMINATION CIRCUIT, SD-98540-01

(C) [OSC IN] AND [REC 1] JACKS OF MANUAL OUTGOING TRUNK TEST CIRCUIT, SD-32349-01, AT STEP-BY-STEP OFFICES PROVIDED WITH THIS CIRCUIT

(D) TRUNK OUTGOING REPEATER, OR EQUIVALENT, TEST JACK AT STEP-BY-STEP OFFICES NOT PROVIDED WITH MANUAL OUTGOING TRUNK TEST ([OGT]) FRAME TEST CIRCUIT, SD-32349-01



NOTES:
1. SINCE THE SIGNALING EQUIPMENT CAN BE ASSOCIATED WITH THE TRUNK EQUIPMENT, 4-WIRE TERMINATING SET, TRANSMISSION EQUIPMENT, OR CARRIER CHANNEL, IT IS NOT SHOWN SEPARATELY.
2. THE EML INCLUDES TEST PAD LOSSES AT EITHER OR BOTH ENDS WHEN SPECIFIED AND BATTERY SUPPLY LOSS WHEN PRESENT IN THE MEASURING PATH BETWEEN THE SPECIFIED TEST LOCATIONS.

LEGEND:
A - SWITCHING PATH
B - LEVEL POINT OF MEASURING EQUIPMENT (INCLUDING TEST PAD WHEN SPECIFIED) CONNECTED THROUGH OGT TEST MULTIPLES AT ORIGINATING (OUTGOING) END OF TRUNK
C - LEVEL POINT OF TEST LINE OR MEASURING EQUIPMENT (INCLUDING TEST PAD WHEN SPECIFIED) CONNECTED THROUGH 101-TYPE TEST LINE AT TERMINATING (INCOMING) END OF TRUNK

Fig. 5—Simplified Diagram of a Typical Trunk Showing EML, Trunk Segments, and Test Jack Access Paths Used for Manual Transmission Measurements at Locations Equivalent to Testboards—All Offices Except No. 4-Type Crossbar, No. 5 Crossbar, and No. 1 ESS